

CENTRAL ELECTRICAL TESTING LABORATORY



DEPARTMENT OF INDUSTRIES AND COMMERCE
GOVERNMENT OF TAMILNADU
KAKKALUR-602 003, TIRUVALLUR DISTRICT, TAMILNADU
(044) 27660384 / 27660302



CERTIFICATE NO.: T - 0103

GETL

TEST REPORT

TEST REPORT No.	TOTAL No. OF PAGES	PAGE
63421 - 2511 / 2011 - 2012	06	1 of 6

CUSTOMER DETAILS

M/s. Macoplast Pipe Industries,
No: 84/3, Sait Palayam,
Hennur Main Road,
Bangalore - 560 084.

Ref. No. & Date : Nil, dt : 21.02.2012
Code No. : -----
Seal : -----
Date of Receipt : 01.03.2012
Period of Testing : 02.03.2012 to 12.04.2012

REFERENCE : IS: 9537 (Part - 3) : 1983
Specification for Conduits for Electrical Installations.
Part - 3: Rigid Plain Conduits of Insulating materials.
(With 1 Amendment)

TEST CHARACTERISTICS : ALL TEST

Number of samples required
as per sampling procedure : 6 lengths

GENERAL REMARKS : The sample so far as, it has been examined and tested, Passes in the All Test.

SAMPLE DETAILS

Item : Rigid plain conduits of
insulating materials for
electrical installations

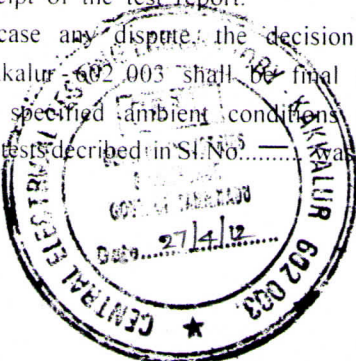
Condition when received : Physically satisfactory
Brand : UNIVERSAL
Classification : Light
Nominal outside diameter : 50 mm
Length of the conduit : 3 mtrs.
Colour : Grey
Quantity : 6 Nos.


ISSUING AUTHORITY
DEPUTY DIRECTOR/IC

OF INDUSTRIES & COMMERCE (E&E)
CENTRAL ELECTRICAL TESTING LABORATORY
KAKKALUR - 602003.

Note:

1. This test report relates only to the products tendered for testing.
2. This test report shall not be reproduced, except in full without the written approval of the issuing authority.
3. In case any clarification on the issued test report, it has to be raised within one month from the date of receipt of the test report.
4. In case any dispute, the decision of The Deputy Director (E & E), Central Electrical Testing Laboratory, Kakkalur - 602 003 shall be final and binding.
5. The specified ambient conditions were maintained during the test.
6. The tests described in Sl. No. were sub - contracted according to the established procedure of this laboratory.



CETL CENTRAL ELECTRICAL TESTING LABORATORY

Test Report No.: 63421 - 2511 / 2011 - 2012	Page 2 of 6
---------------------------------------------	-------------

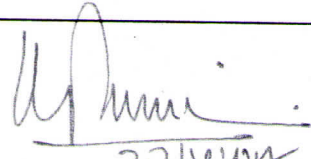
Test Report on Rigid plain conduits of insulating material for electrical installations (ALL TEST)

Sl. No.	Test and Requirements	Clause	Results			Remarks
			(1)	(2)	(3)	
1.	<u>Classification</u> Conduits shall be classified according to mechanical properties as specified.	5.0				Conforms
			Light			
2.	<u>Marking</u> i) Each length of the conduit shall be marked with the following information. a) Manufacturer's name or trade mark, if any b) Nominal size of the conduit c) Country of manufacture d) Information relating to Classification. ii) Marking shall be durable and legible and it shall be checked by inspection and by the method specified. iii) The conduits may also be marked with the ISI certification mark.	6.0				Conforms
			UNIVERSAL			
			50 mm			
			INDIA			
			LIGHT			
			Found durable and Legible			
			Marked			
3.	<u>Dimensions</u> i) The outside diameter shall be in between 49.5 mm and 50.0 mm. ii) The minimum inside diameter shall be 45.1 mm for Light duty conduits.	7.0				Passes
		7.1	Minimum: 49.6	49.6	49.6 mm	
			Maximum: 49.7	49.7	49.7 mm	
		7.2	Minimum: 45.2	45.2	45.2 mm	

Place :

Date :




 27/4/12
ISSUING AUTHORITY
DEPUTY DIRECTOR (E&C)
OF INDUSTRIES & COMMERCE (E&E)
CENTRAL ELECTRICAL TESTING LABORATORY
KAKKALUR - 602003.

CETL CENTRAL ELECTRICAL TESTING LABORATORY

Test Report No.: 63421 - 2511 / 2011 - 2012 Page 3 of 6

Test Report on Rigid plain conduits of insulating material for electrical installations (ALL TEST)

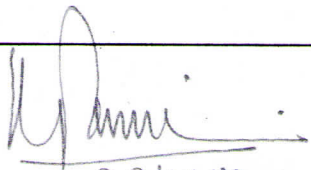
Sl. No.	Test and Requirements	Clause	Results			Remarks
			(1)	(2)	(3)	

	iii) a) The outside diameter of the socket end shall not exceed 29.8 mm	7.1.1		Not applicable		
	b) The inside diameter shall be in between 25.1 mm and 25.4 mm			Not applicable		
	c) The length of the socket end shall not be less 40 mm			Not applicable		
	iv) The maximum and minimum outside diameters and the minimum inside diameter of the conduit shall be checked by means of the gauges specified	7.1.2		Complied with the requirements		
	v) The minimum length of the conduit shall be 3 metres.	7.3		3 metres		
	vi) <u>Uniformity of the wall thickness</u> In no case the difference between the measured value and the average of the 12 values obtained from three samples shall exceed 0.1mm + 10 % of the average value. [0.1 + 0.223 = 0.323 mm]	7.4		Maximum : 0.04 mm Within the limits		
4.	<u>Construction</u> The inside and outside surfaces of conduits shall be smooth and free from burrs, flash and similar defects. The edges over which the conductors or cables are likely to be drawn shall not damage the cables or conductors.	8.0		Complied with the requirements		Conforms
5.	<u>Mechanical Properties</u> The Conduit shall have adequate mechanical strength and the compliance is checked by the following tests.	9.0				Passes

Place :

Date :




 27/4/12
 ISSUING AUTHORITY
 DEPUTY DIRECTOR/IC
 OF INDUSTRIES & COMMERCE (E&E)
 CENTRAL ELECTRICAL TESTING LABORATORY
 KAKKALUR - 602003.

CETL CENTRAL ELECTRICAL TESTING LABORATORY

Test Report No.: 63421 - 2511 / 2011 - 2012	Page 4 of 6
---------------------------------------------	-------------

Test Report on Rigid plain conduits of insulating material for electrical installations (ALL TEST)

Sl. No.	Test and Requirements	Clause	Results			Remarks
			(1)	(2)	(3)	

i) Bending test
 Three samples at room temperature and three samples at $(-) 5 \pm 2^\circ\text{C}$ / 2 hours are bent as specified.

9.2

After the test, the sample shall show no cracks visible to normal or corrected vision without magnification.

Not applicable

ii) Compression test
 The difference between the initial diameter and the diameter of the flattened sample shall not exceed 25 % of the initial diameter while the compression force is still applied.

9.3

(1)	(2)	(3)
13	13	13 %

The difference between the initial diameter and the diameter of the flattened sample, after removal of compression force after one minute, shall not exceed 10 % of the outside diameter, measured before the test.

5	6	6 %
---	---	-----

iii) Impact test
 12 samples shall be conditioned at $60 \pm 2^\circ\text{C}$. for 240 hours and then at $(-) 5 \pm 2^\circ\text{C}$ for 2 hours.

9.4

An impact energy of 1.0 joule shall be applied by a hammer of 1.0 Kg which is allowed to fall from a height of 100 ± 1 mm.

No sign of disintegration and cracks.

Place :

Date :



[Signature]
27/1/12

ISSUING AUTHORITY
 DEPUTY DIRECTOR/IC
 OF INDUSTRIES & COMMERCE (E&E)
 CENTRAL ELECTRICAL TESTING LABORATORY
 KAKKALUR - 602003.

CETL CENTRAL ELECTRICAL TESTING LABORATORY

Test Report No.: 63421 - 2511 / 2011 - 2012		Page 5 of 6				
Test Report on Rigid plain conduits of insulating material for electrical installations (ALL TEST)						
Sl. No.	Test and Requirements	Clause	Results			Remarks
			(1)	(2)	(3)	

There shall be no sign of disintegration, neither shall there be any crack visible on the samples after the test specified.

iv) Collapse test 9.5

The sample shall be bent at room temperature and fixed to a rigid support as specified and kept at $60 \pm 2^\circ\text{C}$ for 24 hours.

After the period, the sample still being secured to the support, the minimum internal diameter is checked by gauge and it shall be possible to pass the gauge through the conduit.

Not applicable

6. Resistance to Heat 10.0 Passes

The sample is kept at $60 \pm 2^\circ\text{C}$ for 2 hours and it shall be pressed by the ball pressure apparatus as specified.

The impression caused by the ball pressure apparatus shall not exceed 2mm.

(1)	(2)	(3)
1	1	1 mm

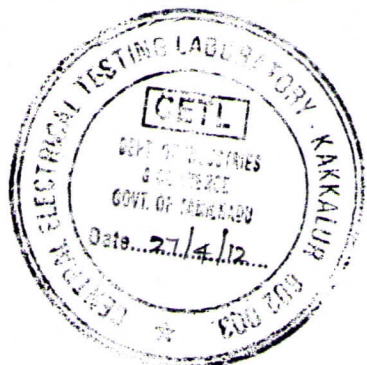
7. Resistance to Burning 11.0 Passes

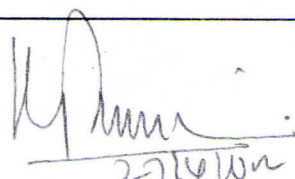
During the exposure of the sample to the flame as specified, the flame shall not spread appreciably and the flame shall have died out in less than 30 seconds after removal of the burner.

(1)	(2)	(3)
8	7	6 Seconds

Place :

Date :




 ISSUING AUTHORITY
 DEPUTY DIRECTOR/IC
 OF INDUSTRIES & COMMERCE (E&E)
 CENTRAL ELECTRICAL TESTING LABORATORY
 KANKALUR - 602003.

CETL CENTRAL ELECTRICAL TESTING LABORATORY

Test Report No.: 63421 - 2511 / 2011 - 2012	Page 6 of 6
---------------------------------------------	-------------

Test Report on Rigid plain conduits of insulating material for electrical installations (ALL TEST)

Sl. No.	Test and Requirements	Clause	Results			Remarks
			(1)	(2)	(3)	

8.	<u>Electrical Characteristics</u>	12.0				Passes
----	-----------------------------------	------	--	--	--	--------

i) Electrical strength

Three samples are bent and immersed in water at $27 \pm 5^\circ\text{C}$. After 24 hours, 2000 V, ac r.m.s., is applied for 15 minutes and no breakdown shall occur during the test.

Withstood Withstood Withstood

ii) Insulation Resistance

Immediately, the samples are immersed in water maintained at $60 \pm 2^\circ\text{C}$ for 2 hours and the insulation resistance measured shall not be less than 100 Megohms.

137600 MΩ
141200 MΩ
129900 MΩ

9.	<u>External Influence</u>	13.0				Passes
----	---------------------------	------	--	--	--	--------

Conduits shall have adequate protection against external influences like low or high temperatures, ingress of water, oil or building materials, corrosive and polluting substances and solar radiation.

Complied with the requirements

i) Ingress of water

Under consideration

ii) Ingress of solid foreign bodies

Under consideration

iii) Corrosion and polluting substances (For metal conduits)

Not applicable

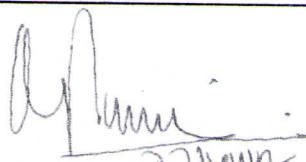
iv) Solar radiation

Under consideration

Place :

Date :




 ISSUING AUTHORITY
 DEPUTY DIRECTOR/IC
 OF INDUSTRIES & COMMERCE (E&E)
 CENTRAL ELECTRICAL TESTING LABORATORY
 KAKKALUR - 602903.